FAIRCHILD
SEMICONDUCTOR TM

April 1988
Revised July 1999

74F125
Quad Buffer (3-STATE)

Features

- High impedance base inputs for reduced loading

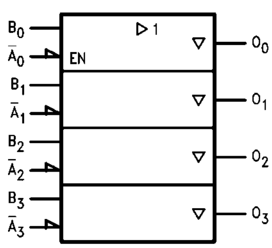
Ordering Code:

Order Number	Package Number	Package Description
74F125SC	M14A	14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-120, 0.150 Narrow
74F125SJ	M14D	14-Lead Small Outline Package (SOP), EIAJ TYPE II, 5.3mm Wide
74F125PC	N14A	14-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300 Wide

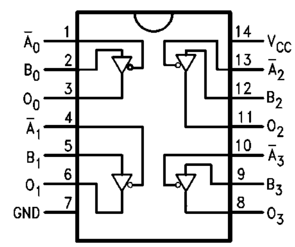
Devices also available in Tape and Reel. Specify by appending the suffix letter “X” to the ordering code.

Logic Symbol

IEEE/IEC



Connection Diagram



Unit Loading/Fan Out

Pin Names	Description	U.L. HIGH/LOW	Input I_{IH}/I_{IL} Output I_{OH}/I_{OL}
$\overline{A}_n$, B_n	Inputs	1.0/0.033	20 µA/−20 µA
O_n	Outputs	600/106.6 (80)	−12 mA/64 mA (48 mA)

Function Table

Inputs		Output
$\overline{A}_n$	B_n	O
L	L	L
L	H	H
H	X	Z

H = HIGH Voltage Level
L = LOW Voltage Level
Z = High Impedance
X = Immaterial

Absolute Maximum Ratings(Note 1)

Storage Temperature	−65°C to +150°C
Ambient Temperature under Bias	−55°C to +125°C
Junction Temperature under Bias	−55°C to +150°C
V_{CC} Pin Potential to Ground Pin	−0.5V to +7.0V
Input Voltage (Note 2)	−0.5V to +7.0V
Input Current (Note 2)	−30 mA to +5.0 mA
Voltage Applied to Output	
in HIGH State (with V_{CC} = 0V)	
Standard Output	−0.5V to V_{CC}
3-STATE Output	−0.5V to +5.5V
Current Applied to Output	
in LOW State (Max)	twice the rated I_{OL} (mA)

Recommended Operating Conditions

Free Air Ambient Temperature	0°C to +70°C
Supply Voltage	+4.5V to +5.5V

Note 1: Absolute maximum ratings are values beyond which the device may be damaged or have its useful life impaired. Functional operation under these conditions is not implied.

Note 2: Either voltage limit or current limit is sufficient to protect inputs.

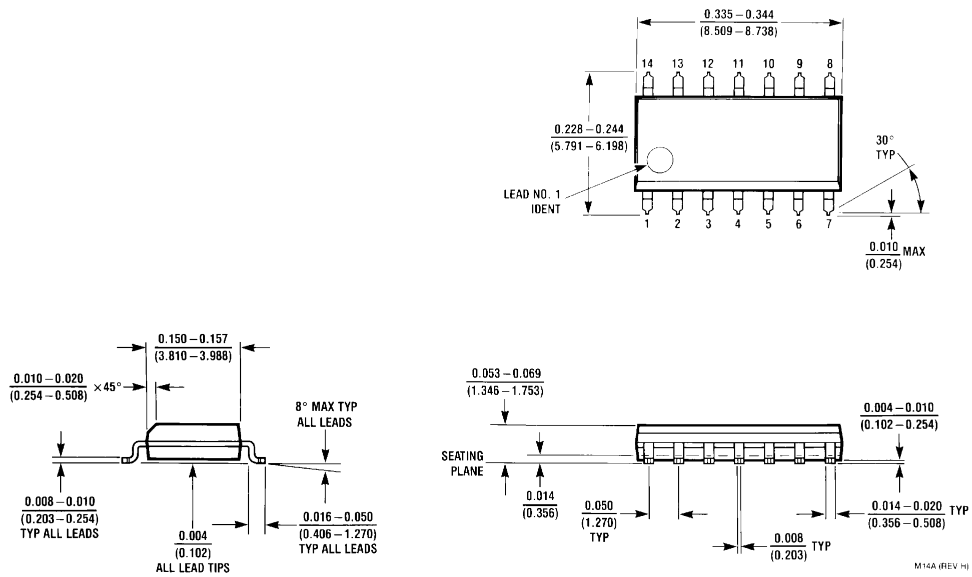
DC Electrical Characteristics

Symbol	Parameter		Min	Typ	Max	Units	V_{CC}	Conditions
V_{IH}	Input HIGH Voltage		2.0			V		Recognized as a HIGH Signal
V_{IL}	Input LOW Voltage				0.8	V		Recognized as a LOW Signal
V_{CD}	Input Clamp Diode Voltage				−1.2	V	Min	I_{IN} = −18 mA
V_{OH}	Output HIGH	10% V_{CC}	2.4			V	Min	I_{OH} = −3 mA
	Voltage	10% V_{CC}	2.0					I_{OH} = −12 mA
		5% V_{CC}	2.7					I_{OH} = −3 mA
		5% V_{CC}	2.0					I_{OH} = −15 mA
V_{OL}	Output LOW Voltage	10% V_{CC}			0.55	V	Min	I_{OL} = 64 mA
I_{IH}	Input HIGH Current				20	µA	Max	V_{IN} = 2.7V
I_{BVI}	Input HIGH Current Breakdown Test				100	µA	0.0V	V_{IN} = 7.0V
I_{IL}	Input LOW Current				−20.0	µA	Max	V_{IN} = 0.5V
I_{OZH}	Output Leakage Current				50	µA	Max	V_{OUT} = 2.7V
I_{OZL}	Output Leakage Current				−50	µA	Max	V_{OUT} = 0.5V
I_{OS}	Output Short-Circuit Current		−100		−225	mA	Max	V_{OUT} = 0V
I_{CEX}	Output HIGH Leakage Current				250	µA	Max	V_{OUT} = V_{CC}
I_{ZZ}	Buss Drainage Test				500	µA	0.0V	V_{OUT} = 5.25V
I_{CCH}	Power Supply Current			18.5	24.0	mA	Max	V_O = HIGH
I_{CCL}	Power Supply Current			31.7	40.0	mA	Max	V_O = LOW
I_{CCZ}	Power Supply Current			27.6	35.0	mA	Max	V_O = HIGH Z

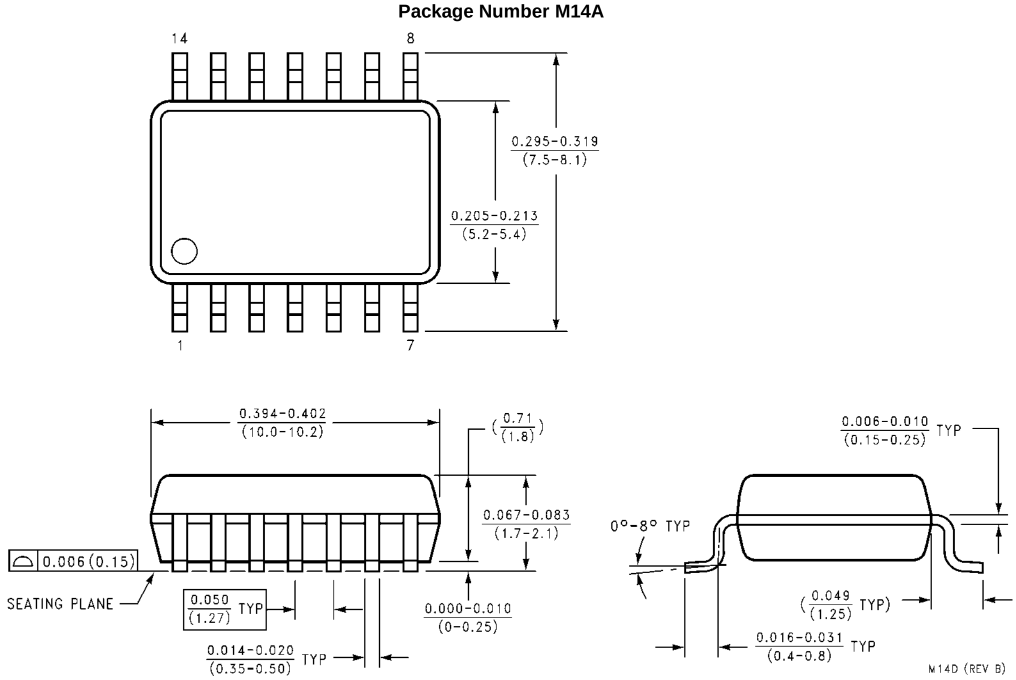
AC Electrical Characteristics

Symbol	Parameter	T_A = +25°C, V_{CC} = +5.0V, C_L = 50 pF			T_A = 0°C to +70°C, V_{CC} = +5.0V, C_L = 50 pF		Units
		Min	Typ	Max	Min	Max	
t_{PLH}	Propagation Delay	2.0	4.0	6.0	2.0	6.5	ns
t_{PHL}		3.0	4.6	7.5	3.0	8.0	
t_{PZH}	Output Enable Time	3.5	4.7	7.5	3.0	8.5	ns
t_{PZL}		3.5	5.3	8.0	3.5	9.0	
t_{PHZ}	Output Disable Time	1.5	3.9	5.5	1.5	6.0	ns
t_{PLZ}		1.5	4.0	6.0	1.5	6.5	

Physical Dimensions inches (millimeters) unless otherwise noted

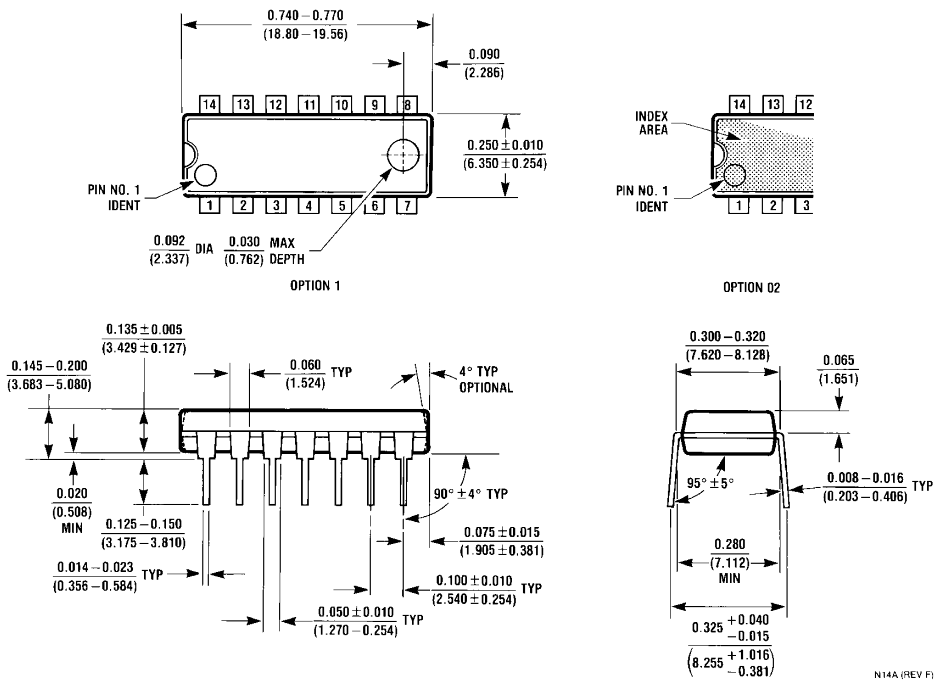


14-Lead Small Outline Integrated Circuit (SOIC), JEDEC MS-120, 0.150 Narrow Package Number M14A



14-Lead Small Outline Package (SOP), EIAJ TYPE II, 5.3mm Wide Package Number M14D

Physical Dimensions inches (millimeters) unless otherwise noted (Continued)



14-Lead Plastic Dual-In-Line Package (PDIP), JEDEC MS-001, 0.300 Wide
Package Number N14A